



Addressing frequency and magnitude of recent snow avalanches in Northern Iceland and Western Norway by using dendrogeomorphology

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Snow avalanches are common in mountain areas of various kinds of cold environments. The more or less severity of wintry conditions determines the thickness, durability and stability of snow cover during the cold season. Winter conditions therefore influence the frequency and magnitude of snow avalanches. The aim of this research is (i) to use dendrogeomorphology as a proxy to extract the chronology of snow avalanches on colluvial surfaces (talus and cones) by analysing the tree-ring growth, and (ii) to study the various impacts snow avalanches on trees, i.e. the formation and dating of reaction wood. The study sites are located in Northern Iceland (Dalsmyrni, Ljósavatnskarð and Fnjóskadalur valleys), and in Western Norway (Erdalen and Bødalen valleys).

All sites are typical U-shaped valleys with important bedrock valley walls that develop downslope in slope accumulations, swept by numerous snow avalanches leaving geomorphological evidence of a significant activity. The currently investigated tree specie is *Betula* sp., birches being common in both areas. The results provide a temporal catalogue of snow-avalanche events during the last ± 100 years in areas with shortest historical records, and determine the changes in snow-avalanches regime during the same period. This can be correlated with snow-cover changes in the upper catchment areas. Such results are of interest for (i) the understanding of global changes on snow-avalanche activity in cold mountain areas, and (ii) getting a better knowledge of past frequency and magnitude of snow avalanches in areas of poor historical records, in relation with natural hazards.